Get Connected...
with DNR's Interactive Maps

Want to know what conditions to expect over the next stage of RAGBRAI? How hilly will it be, what towns and parks are between here and there, or what services are coming up in the next town? Take a look at the **Iowa DNR Interactive Mapping Service** (IMS) website. Go to www.iowadnr.gov and click on "Mapping (GIS Interactive)" located on the menu bar along the left side.

Two GIS Interactive sites can be very useful along the RAGBRAI route. These are the **"Recreation Map"** and the **"Basic Map and Air Photography Viewer."** Both include such information as topographic maps, public lands, town locations, and more.

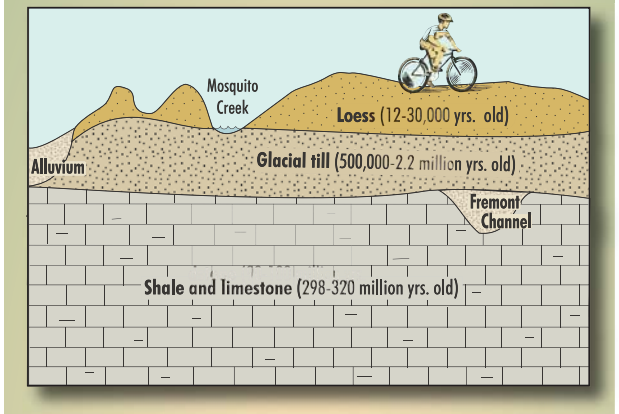
The Recreation Map is focused on the Iowa outdoors. The "Service" folder contains several layers with locations for any kind of service a person might need while on vacation. Businesses such as grocery stores, sporting goods stores, bookstores, and others are included. Also find museums, wineries or other artisan related sites. Need repairs? Different repair related businesses are also included.

The Basic Map and Air Photography Viewer is more map focused. While offering information similar to the Recreation Map, it includes samples of new projects in the DNR. Check the box near "Air Photography 1930s (SW Story County)" to look back at how the landscape used to look in this area of the state. More of the state is coming, so check later to see if your area of interest has been added.

All IMS sites have a link for beginners located under "Getting Started." Help in using the map services is available in the upper right corner of the page where it says "for website help, click here."

Enjoy and happy biking!

Day 1 Milestones



Start: Missouri Valley
Boyer River: 0.5 miles
Loess Hills/So. Iowa Drift Plain Boundary: 6.3 miles
Beebeetown: 8.5 miles
Mosquito Creek: 28 miles
Keg Creek: 33 miles
Finish: Harlan – 55 miles

Iowa GeoBooks

Iowa's Geological Past
by Wayne Anderson, University of Iowa Press, 1998

"The only authoritative overview of Iowa's geologic record… [Wayne Anderson's] coverage is so current, comprehensive, and authoritative that professionals as well as rock and fossil enthusiasts will each need a copy."

Brian F. Glenister, A.K. Miller Professor of Geology Emeritus, University of Iowa

Landforms of Iowa
by Jean C. Prior, University of Iowa Press, 1991

"Jean Prior writes about the glacial geology of Iowa as if it's an old friend. She knows and cares about her subject and explains Iowa's geologic attractions with a sure hand."

Rex Buchanan, Kansas Geological Survey

RAGBRAI 2008

Learn about the Land

Sunday, July 20

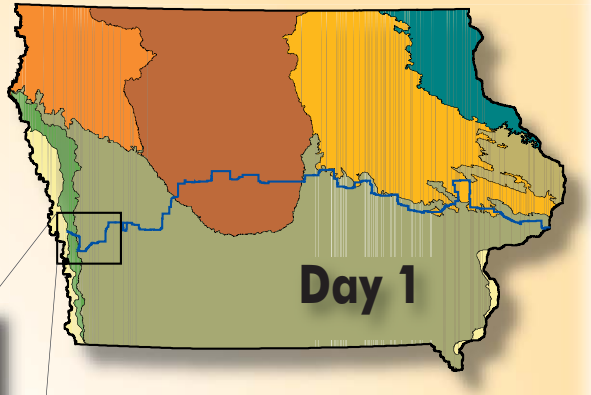
Day 1

Iowa DNR – Geological and Water Survey
109 Trowbridge Hall
Iowa City, IA 52242-1319
(319)-335-1575
www.igsb.uiowa.edu

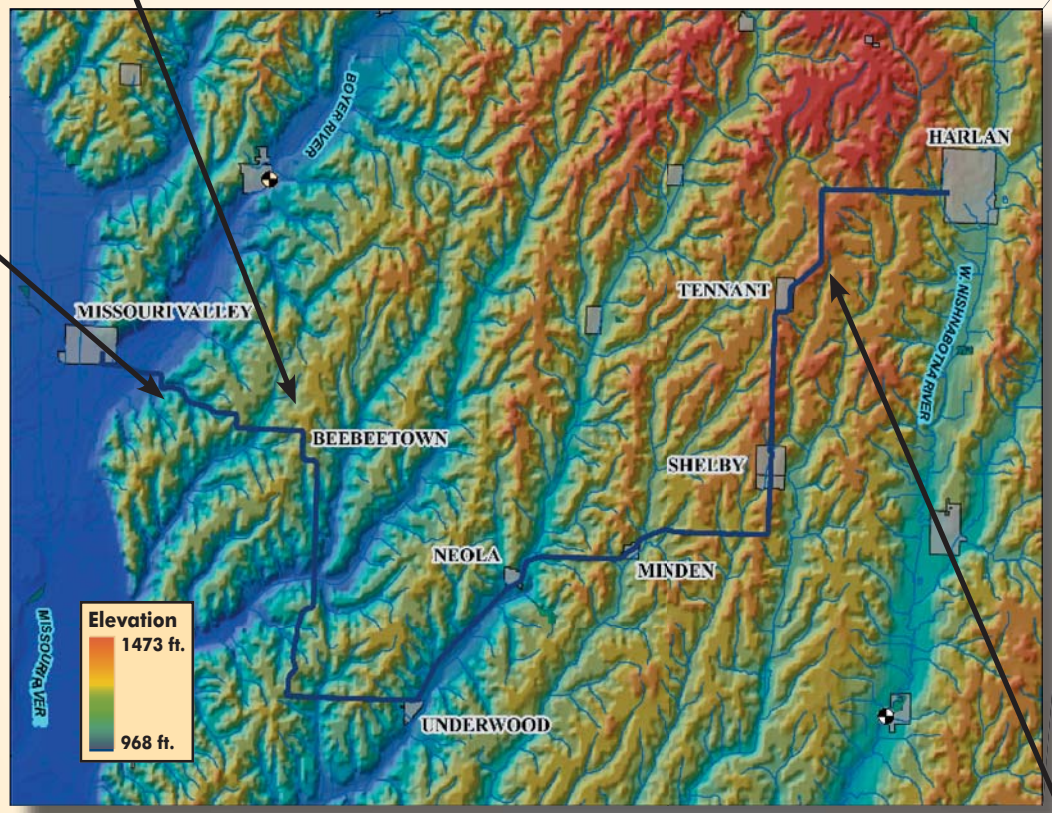
US Geological Survey
Iowa Water Science Center
400 S. Clinton St.
Iowa City, IA 52240
(319) 337-4191
http://ia.water.usgs.gov

As soon as you depart from Missouri Valley today you will start climbing onto the **Loess Hills**. (See cover photo.) Loess, or wind-blown silt, originated from the historic Missouri River and accumulated on this landscape during the last "Ice Age" from 12,500 to 24,000 years ago. During warmer periods the ancient Missouri River would deposit fine sediment from the northern glaciers along its banks. During cold periods, strong westerly winds would blow loess onto the eastern side of the valley, much like snowdrifts. Today, some places have loess well over 100 feet thick.

The Iowa map to the right shows RAGBRAI*'s route for* 2008. *Also shown are the* ***Landform Regions of Iowa*** (*see Day 3*). *This year* RAGBRAI *will be traveling through five of Iowa's seven Landform Regions.*



Immediately east of Missouri Valley, you will pass near a famous source of **"Ice Age" fossils**. These are found in old gravel pits in the valley wall of the Boyer River. Beneath the thick cover of loess, a section of old glacial till covers an interval of sand and gravel. These gravel deposits are the source of a number of fossils of extinct creatures that inhabited Iowa during the **Pleistocene** period (11,500-1.8 million years ago). These gravel pits have produced abundant bones and teeth of large Pleistocene mammals, making it one of the most productive sites for such fossils found in Iowa. This impressive list of fossils includes: several species of extinct horses (Equus), a giant ground sloth, giant camels, mammoths, mastodons, a Pleistocene moose, an extinct goat-like animal (Aftonius), giant beavers, and a large bear.



Just like its name, Missouri Valley derives its drinking water from the buried river deposits of the **Missouri River Valley**. Their wells are about 90 feet deep and are located just south of the loess hills topography. The Source Water Protection Evaluation for this aquifer is "highly susceptible" to contamination. That doesn't mean you shouldn't drink the water; rather, be careful regarding potential sources of contamination in this area.

Today as you pass over streams and valleys you'll see landscape evolution at work in the form of **gullying**. For many years it was thought that agriculture and urbanization were responsible for gullies. It is now understood that the gullying process has been a part of the western Iowa landscape for the last 12,000 years. It's primarily caused by streams and the erosional features of the thick loess blanket that caps this landscape. (See photo below.)

The **Fremont Channel** is a buried ancient river channel that runs from Minnesota to Missouri, and is considered the ancestral Missouri River. The materials buried within it represent one of the most comprehensive records of glaciation in North America. Currently the Iowa Geological and Water Survey is considering exploration of the channel to document its rich history.

Printed on recycled paper.